Adolescent Aesthetic Athletes:

A Group at Risk For Eating Pathology?

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Abstract

Previous research shows that leanness- and weight-dependent sports increase the risk of developing disturbed eating behaviour. This study investigated whether adolescent aesthetic athletes (n = 68, M = 14.6 years), particularly ballet dancers and figure skaters, exhibit more eating pathology compared to the general population. Furthermore, it was investigated whether sport-related factors have explanatory value for the dieting behaviour of aesthetic athletes.

To asses eating pathology, reliable and valid self-report questionnaires were used including the Eating Disorder Inventory-II, the Children 's Eating Disorder Examination-Questionnaire and the Dutch Eating Behaviour Questionnaire.

Results show that female aesthetic athletes show more drive for thinness, features of bulimia, dieting behaviour and concerns about weight and shape compared to female adolescents from the general population. Concerning the explanation of dieting behaviour in aesthetic athletes, both sport-related factors (competition state anxiety) and general risk factors (eating concern) seem to be relevant.

These results suggest that female aesthetic athletes show more disturbed eating behaviour and thoughts than female adolescents from the general population and therefore may have an enhanced risk of developing clinical eating disorders.

Keywords: disturbed eating behaviour; aesthetic athletes; ballet; figure skating.

1. Introduction

Studies have shown that in certain sports, adolescent athletes have an increased risk of developing eating disorder (ED) pathology compared to adolescents from the general population. Moreover, ED pathology seems to be more prevalent in (a) athletes compared to non-athletes, particularly in high sport level athletes, (b) female compared to male athletes and (c) leanness- and weight-dependent sports compared to other sports (eg. Filaire, Rouveix, & Bouget, 2008; Sundgot-Borgen,1999; 2002; 2004).

The present study will particularly focus on one of those leanness- and weight-dependent sport-groups, namely aesthetic sports and more specifically on individual figure skating and ballet. Previous studies conducted on eating pathology in those two specific sports are scarce and mainly focus on female adult athletes. For example, similar eating pathology profiles were found in female ice skaters (part of a figure skating pair) as in females with EDs (Taylor & Ste Marie, 2001). Also, studies found a lower Body Mass Index (BMI), a higher prevalence of clinical EDs and more features of (subclinical) eating pathology in female adult ballet dancers compared to the general population (eg. Abraham, 1996; Ravaldia et al., 2003; Ringham et al., 2006).

As concerns the aetiology, research emphasizes the possibility of sport-related factors being of more influence on the development of eating pathology in athletes compared to the more general ED risk factors (eg. Bonci et al., 2008).

The objective of this study is to investigate hypotheses on both the prevalence and aetiology of ED pathology in adolescent aesthetic athletes. Moreover, our first research question will overcome some of the shortcomings of previous research by examining whether eating pathology is prevalent in aesthetic adolescent athletes, i.e. in both male and female individual figure skaters (not part of a figure skating pair) and

ballet dancers. Secondly, our study wants to investigate whether sport-related factors like sport-level (hours of sport per week) and competition anxiety (both as trait and state) explain aesthetic athletes' dieting behaviour, as well as the additional explanatory value of more general risk factors. Since Martinsen, Bratland-Sanda, Eriksson and Sundgot-Borgen (2001) found enhancement of performance to be the primary reason to lose weight in elite athletes, a link might exist between anxiety related to performance on competitions, and the presence of ED pathology in athletes.

The general risk factors are depicted from the transdiagnostic model of Fairburn, Cooper and Shafran (2003), a comprehensive model on the development and maintenance of eating disorders which has already proven its applicability in the general population (Stice, 2002). Both the assumed preceding (weight concern, shape concern and eating concern) and sustaining factors (perfectionism, low self-esteem, emotional intolerance and interpersonal difficulties) of eating pathology will be analysed.

2 Method

2.1 Participants

The aesthetic athlete sample consists of 68 athletes (aged 11-21), who practiced ballet or figure skating for at least ten hours per week. The figure skaters constitute 35.3% (*n*=24) of the athlete group and were recruited through Belgian figure skating clubs; the ballet dancers 64.7% (*n*=44) of the group and were recruited through a prestigious ballet school in Belgium. The total group contained 76.5% (*n*=52) females and 23.5% (*n*=16) males. Of the aesthetic athletes, 25% (*n*=16) were underweight and 1.5% (*n*=1) overweight. Response rate in the total group was 89.5%.

2.2 Instruments

Subject variables. Participants reported on age, sex, height and weight. This allows to calculate the BMI and adjusted BMI (BMI / Percentile 50 of BMI for age and sex; normal range: 85-120) (Fredriks, van Buuren, Wit, & Verloove-Vanhorick, 2000). Furthermore, sport participation was assessed with sport level being determined by hours of sport per week.

Sport Competition Anxiety Test (SCAT) (Martens, 1977) is a self-report questionnaire measuring competition anxiety as personality trait (disposition). Competition anxiety disposition (CAD; Cronbach's alpha (α) .47) is defined as the tendency to experience situations as threatening and to react to them with feelings of anxiety or nervousness.

Competitive State Anxiety Inventory-2 (CSAI-2) (Martens, Burton, Rivkin, & Simons, 1980) is a self-report questionnaire to measure anxiety as an emotional state before a competition. Competition state anxiety (CSA) reflects feelings of anxiety, nervousness and uncertainty that one can experience at the start of a specific competition. The CSAI-2 provides scores for cognitive anxiety (negative expectations regarding the sport performance; α = .87), somatic anxiety (physiological and vegetative features; α = .80) and lack of self-confidence (α = .78).

The Dutch Eating Behaviour Questionnaire (DEBQ) (Van Strien, Frijters, Bergers, & Defares, 1986) is a self-report questionnaire that normally detects three types of eating behaviour. Here, only external (eating in response to an external cue without being hungry; α = .70) and emotional eating (eating when one becomes overwhelmed by certain emotions; α = .92) are assessed.

Eating Disorder Inventory II (EDI-II) (Garner, 1991) is a self-report questionnaire measuring psychological and behavioural characteristics related to EDs. The following eating pathology scales were assessed: Drive for Thinness (EDI-II-DT; α = .89), Bulimia (EDI-II-B; α = .76) and Body Dissatisfaction (EDI-II-BD; α = .93). In addition, Perfectionism (EDI-II-P; α = .68) and Interpersonal Distrust (EDI-II-ID; α = .75) were included to measure related psychological characteristics.

Children's Eating Disorder Examination Questionnaire (ChEDE-Q). (Decaluwé & Braet, 1999) is a self-report questionnaire assessing specific ED behaviours and is derived from the Eating Disorder Examination interview (EDE, Fairburn & Cooper, 1993). The questionnaire is divided into four subscales: dieting behaviour (α .84), weight concern (chEDEQ-WC; α = .83), shape concern (chEDEQ-SC; α = .92) and eating concern (chEDEQ-EC; α = .71).

Children's Depression Inventory (CDI) (Kovacs & Beck, 1977) is a self-report screening questionnaire measuring affective, cognitive and behavioural symptoms of depression. Cronbach's alpha is .84.

The Self-Perception Profile for Adolescents (SPP-A) (Harter, 1988) is a self-report questionnaire in which various aspects of the self-concept are examined in adolescents. Here, two of the seven subscales were administered, i.e. physical appearance (α = .84) and general self-esteem (α = .83).

3 Results

3.1 Descriptive Statistics

Comparing both sport groups, there are no differences in terms of age, $F(1,66) = 1.08$, $p > .05$, and sex ratio, $\chi^2(1) = 2.51$, $p > .05$. In both groups, the average age is about 14.5 years and there is a majority of girls present. However, they do differ on

hours of sport practiced, $F(1,64) = 48.02$, $p < .001$ and adjusted BMI, $F(1,66) = 16.47$, $p < .001$. The ballet dancers train more hours per week and have a lower adjusted BMI compared to the figure skaters. No differences occurred on eating pathology (EDI-II, ChEDEQ and DEBQ) using three one-way MANOVA's.

3.2 Is Eating Pathology Prevalent among Aesthetic Athletes?

INSERT TABLE 1 HERE

Table 1 shows a comparison between the aesthetic athletes and the norm groups (Braet et al., 2008; Garner, 1991; Goossens & Braet, 2010) on the nine eating pathology subscales of the EDI-II, ChEDEQ and DEBQ. Significant differences were found on five subscales, i.e. the female athletes showed significantly higher drive for thinness, more features of bulimia, engage more in dieting behaviour and have more concerns about their weight and body shape compared to the female norm group. No significant differences were found on body dissatisfaction, eating concerns, emotional and external eating.

The table shows no significant differences between the male aesthetic athletes and the male adolescent norm group on the nine eating pathology subscales.

3.3 Explanatory Power of Sport-related Factors for Athletes' Dieting Behaviour

INSERT TABLE 2 HERE

Results of the hierarchical multiple regression analysis demonstrated in table 2, with dieting behaviour as the dependent variable, show that the model with the sport-related factors (model 2) outperforms the model that only takes account for the control variables age and gender, $F\text{change}(3,50) = 3.10$, $p < .05$. The model that takes account of the sport-related factors explains 24% of the variance of the dieting behaviour in

aesthetic athletes, $F(5,50) = 3.16$, $p < .05$. Within this model, two variables play a significant role, i.e. age ($\beta = .28$, $p < .05$) and competition state anxiety ($\beta = .45$, $p < .01$). Block 3, the addition of the preceding and maintaining factors of the transdiagnostic model, adds a great amount of variance to the second model, *F*change (7,43) = 20.5, $p < .001$. This third model explains 83% of the variance of dieting behaviour in the aesthetic athletes with only eating concern as significant variable, ($\beta = .55$, $p <. 001$).

4 Discussion

Results of the present study indicate that female figure skaters and ballet dancers show more eating pathology compared to female adolescents from the general population: higher drive for thinness, more features of bulimia, more dieting behaviour and more concerns about their weight and body shape. In male aesthetic athletes, no differences were found with the male norm group. These findings are in line with previous research showing a higher prevalence of eating pathology in (a) aesthetic athletes compared to non-athletes and (b) female compared to male athletes (Sundgot-Borgen & Torstveit, 2004).

With regard to the aetiology of athletes' dieting behaviour, the model only taking account the sport-related factors, explains 24% of the variance of the dieting behaviour. Within this model, both age and competition state anxiety play a significant role. However, adding the preceding and maintaining factors from the transdiagnostic model of Fairburn et al. (2003), leads to a more significant model explaining a total of 83% of the variance with eating concern as significant variable.

These results emphasize the importance of cognitive concerns as core psychopathology for eating pathology. However, only eating concern was of

significance. This might be due to our dependent variable, dieting behaviour, which is almost directly linked to eating concerns. Weight and shape concerns might therefore be more distant variables. Although the preceding factors of the transdiagnostic model seem to be of most importance, results show that sport-related factors might also be of relevance in absence of negative self-evaluation, particularly competition state anxiety. Feeling anxious, nervous and uncertain at the start of competitions might put aesthetic athletes at risk for developing eating pathology which might possibly function as a way to control fear and enhance performance (Martinsen et al., 2010).

Strengths of this study entail the under-researched study sample of individual elite figure skaters and ballet dancers with the inclusion of male athletes as well as the focus on sport-related factors in explaining dieting behaviour, especially with the absence of prior research on competition anxiety.

This study also has some limitations. Firstly, it is a cross-sectional study so no conclusive decisions can be made about directions of effects. Secondly, the use of self-report questionnaires has disadvantages in athletes, i.e. a tendency of underreporting eating pathology and associated psychological features (Johnson, Powers, & Dick, 1999) which might lead to false negatives and underestimation of our findings. A third limitation is the use of self-reported length and weight to calculate adjusted BMI. Therefore, a possible bias cannot be excluded. Fourthly, although the impact of selection bias is estimated as minimal, only athletes with little to no eating pathology may have entered our study while athletes with more severe pathology may not have participated. This would lead to conclude that all significant findings of our study are indeed indicative of important trends. Finally, participants where almost exclusively white with high socio-economic status which limits the generalizability of our findings.

To conclude, our study shows that eating pathology is prevalent in leanness- and weight-dependent sports, i.e. figure skating and ballet, especially in female athletes. Both dysfunctional cognitive concerns (eating concern) and sport-related factors (competition state anxiety) seem to have explanatory value for the dieting behaviour of aesthetic athletes. Clinically, the results emphasize the importance of developing adequate prevention and screening programs for athletes in the future. Furthermore, specific etiological models of eating pathology should be developed for (aesthetic) athletes taking account of sport-related and more general risk factors.

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Table 1. Aesthetic Athletes versus Norm Group on the Eating Pathology Subscales.

Variable	*Athletes (F) (M/SD)*	*Norm (F) (M/SD)*	*Stat (t)*	*Athletes (M) (M/SD)*	*Norm (M) (M/SD)*	*Stat (t)*
DT	20.8 (9.21)	16.8 (7.8)	3.07**	13.31 (6.22)	13.1 (3.6)	.14
B	13.46 (4.90)	11.4 (4.6)	3.04**	12.31 (4.90)	10.8 (3.5)	1.24
BD	29.54 (11.93)	31.4 (12.8)	-1.13	26.25 (12.54)	19.8 (8.7)	2.06
Restraint	1.00 (1.18)	.61 (.95)	2.31*	.55 (1.00)	.30 (.71)	1.00
WC	1.71 (1.49)	1.27 (1.26)	2.09*	.99 (1.20)	.32 (.64)	1.56
EC	.59 (.98)	.47 (.75)	.87	.44 (.61)	.52 (.79)	.76
SC	1.77 (1.44)	1.32 (1.29)	2.16*	1.20 (1.47)	.53 (.82)	1.81
Emo	2.28 (.75)	2.19 (.78)	.85	2.21 (.92)	1.97 (.73)	1.05
Extern	3.03 (.46)	2.97 (.63)	1.02	3.26 (.82)	3.04 (.71)	1.09

Note: F=Female; M=Male; Stat=Statistic; DT=Drive for Thinness; B=Bulimia; BD=Body Dissatisfaction. WC=Weight Concern; EC=Eating Concern; SC=Shape Concern; Emo=Emotional Eating; Extern=External Eating.

*p<.05; **p<.01.

Table 2. Summary of Hierarchical Regression Analysis for Variables Predicting Dieting in Aesthetic Athletes.

	Model 1			Model 2			Model 3		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Age	.14	.07	.25	.16	.08	.28*	.02	.05	.03
Gender	.60	.39	.20	.39	.38	.13	.12	.23	.04
Hours sport/week				.01	.03	.06	-.02	.02	-.07
CAD				-.06	.07	-.16	-.00	.04	-.01
CSA				.04	.02	.45**	.00	.01	.02
WC							.16	.15	.20
SC							.21	.13	.25
EC							.69	.14	.55***
P							.02	.02	.08
ID							.01	.02	.06
Depr Symptoms							.01	.02	.04
Self-Esteem							.27	.15	.20
R^2 Change		.10			.14			.59	
F Change		2.90			3.10*			20.5***	

Note: CAD=Competition anxiety disposition; CSA=Competition State Anxiety; WC=Weight Concern; SC=Shape Concern; EC=Eating Concern; P=Perfectionism; ID=Interpersonal Distrust; Depr symptoms=Depressive symptoms.

*p<.05; **p<.01;***p<.001.